

Patent claims**Particle-stabilised emulsions**

- 5 1. An emulsion of the water-in-oil (W/O) or oil-in-water (O/W) type, containing:
- 10 - an oil phase (phase A), containing one substantially water-insoluble component or optionally a plurality of substantially water-insoluble components,
 - a water phase (phase B) which may optionally contain further water-soluble components, such as salts or organic compounds, such as
15 alcohols, carboxylic acids or other compounds,
 - pyrogenic silica which is arranged at the oil-water interface and is partly silylated in a manner such that the content of non-silylated surface silanol groups on the silica surface is
20 from not more than 95% to not less than 5% of the starting silica, equivalent to from 1.7 to 0.1 SiOH groups per nm² of silica surface, the dispersion fraction of the surface energy γ_{s-D} is from 30 to 80 mJ/m² and the
25 specific BET surface area has a value of from 30 to 500 m²/g,
 - and optionally further substances, such as pigments or preservatives,
- 30 the emulsions having a mean particle size of the disperse phase, i.e. a mean drop diameter, of from 0.5 μm to 500 μm , the emulsions having a low viscosity, low viscosity meaning that the emulsions have relative viscosities η_r in the range of from 1 to 10⁶, the relative viscosity being
35 defined as the quotient $\eta_{rel} = \eta/\eta_0$ of the measured viscosity of the emulsion η , measured at 25°C and a shear rate $D = 10 \text{ s}^{-1}$, divided by the viscosity of the pure homogeneous phase η_0 ,

and the relative viscosity η_{rel} of the emulsion obeys the formula $\eta_{rel} = (1-\Phi/0.74)^{-([\eta] \cdot 0.74)}$, Φ being the phase volume of the disperse phase and $[\eta]$ being a form factor which is in a range of from 2.5 to 100 for the emulsions according to the invention.

2. The emulsion as claimed in claim 1, characterized in that it is stable to separation of the disperse phase, i.e. it is stable to creaming or sedimentation of the disperse phase, stable to separation meaning that the volume of the phase depleted in dispersion is less than 10% of the total volume.
3. A process for the preparation of the emulsion as claimed in either of claims 1 and 2, characterized in that a highly concentrated finely divided dispersion of the corresponding silica in the liquid which forms the homogeneous phase in the emulsion is prepared in a first step, and a highly viscous preemulsion which comprises the total amount of the disperse phase and the highly concentrated finely divided dispersion of the silica, prepared in the first step, in the liquid which forms the homogeneous phase in the emulsion according to the invention is prepared in a second step, the volume of dispersion used being such that the total amount of the silica required is present, and the remaining homogeneous phase being slowly metered in in a third step.
4. The use of the emulsion as claimed in claim 1 or 2 as coating materials, adhesives and sealants, emulsions for cosmetic and pharmaceutical applications, cleaning and cleansing agents or applications for changing the interfacial properties of solid and liquid substrates, such as water repellents, adhesion promoters, release agents,

paper coatings or foam control agents and for the preparation of W/O/W or O/W/O multiple emulsions as control release systems or for the segregation of inert and reactive substances.

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5. A coating material, adhesive or sealant which contains an emulsion as claimed in claim 1 or 2.

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6. A cleaning or cleansing agent which contains an emulsion as claimed in claim 1 or 2.

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7. A water repellent, adhesion promoter, release agent, paper coating or foam control agent which contains an emulsion as claimed in claim 1 or 2.

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8. A W/O/W or O/W/O multiple emulsion which contains an emulsion as claimed in claim 1 or 2.

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9. A stability analyzer, characterized in that it comprises a flat-bed scanner having a sample holder for holding measuring cells perpendicularly to the scanner lamp, a tilted mirror which deflects the light of the scanner lamp laterally onto the measuring cells, and an evaluation apparatus for evaluating the light received.